

Management of Stink Bugs in Organic Tomato Production in Alabama

Authors:

Anitha Chitturi, Olufemi S. Ajayi, Franklin Quarcoo
Kokoasse Kpomblekou-A, and Desmond Mortley

Stink Bug:

The common stinkbugs in Alabama include the southern green stinkbug (Nezara viridula), the green stink bug (Chinavia hilaris), and the brown marmorated stink bug (Halyomorpha halys) and these three make up the traditional species complex in Alabama

Introduction: Stink bugs are large triangular bugs in the Pentatomidae family of insects. They usually appear in green or brown colors. Their common name is derived from disagreeable odors produced by their scent glands to deter predators. They give an awful odor when crushed. The insects possess piercing-sucking mouthpart and use it to suck sap from plants. Several species of stink bugs have been reported on a large number of crops and they cause significant damage as they feed on these crops. However, they cause most damage to tomato, pepper, bean, okra and fruit crops. In the past 3 years in the southeast United States, stink bugs have shifted from occasional minor pests to frequent major pests. The most common species in Alabama are the green stink bug (*Acrosternum hilare*) and brown stinkbug (*Euschistus servus*). Stink bugs build up their populations on alternate hosts like broadleaf weeds, legumes and soybeans until cultivated hosts become available. They overwinter as adults in the northern parts of the US but are active all year round in the warmer southern regions of the US.

Identification: All adult stink bugs have a distinct shield-shaped body that is either green or brown in color. Green stink bugs are usually 3/4 inch in length, bright green in color, with a narrow orange-yellow line bordering their body regions. Brown stink bugs on the other hand are usually about 1/2 to 5/8 inch in length and dull greyish-yellow in color. Nymphs of the green stink bugs are usually black in color, however as they mature they turn green with orange and black markings. Nymphs of the brown stink bugs are usually light green in color. Adult stink bugs become active during early summer and each female lays several hundred barrel-shaped eggs in clusters of 20-30 eggs that are laid on the foliage of host plants. Nymphs feed throughout the summer and molt to adults in late summer. The insect typically completes 2-3 generations each year.

Injury: Adults as well as nymphs pierce and suck sap using their needle-like mouthparts (i.e. stylets) from the leaves, buds, growing shoots and developing fruits of tomatoes. Their damage on green tomato fruits appear as characteristic white or yellow scars on the skin or sunken areas in tissues where the insects' stylets were inserted into the fruits. These points of insertion remain light green on ripe tomato fruits. Young fruits of stinkbug-infested tomatoes are usually retarded in growth, wither and drop-off the plants. In addition to the noticeable damage on tomato fruits, feeding activity of stink bugs sometimes result in the mechanical transmission of bacterial spot disease caused by *Xanthomonas* spp.

Management: To estimate the quantity of stink bugs on tomato and their life stage, sampling with a sweepnet to collect stink bugs is traditionally performed. The economic threshold level (number of insects above which there will be economic losses) suggested in Alabama is 0.25 stink bugs per ten plants at green fruiting stage of tomato. A key management strategy to reduce stink bugs is the elimination of weeds from within and around fields. This is because several weed plants serve

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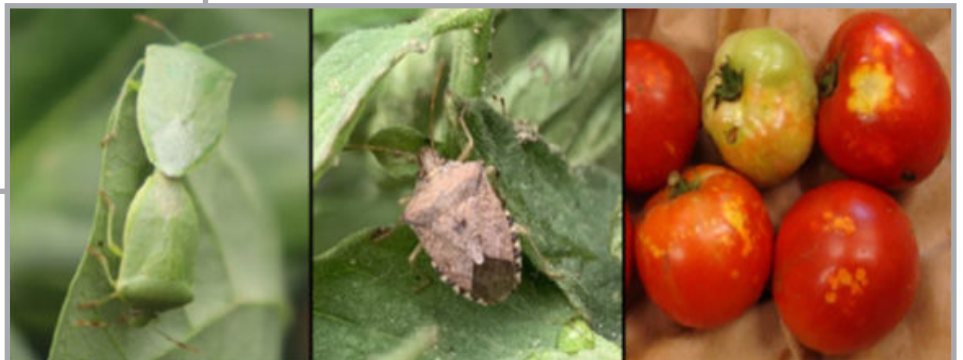
as overwintering hosts for stink bugs and leaf-footed bugs. Good weed management around fields helps to reduce the quantity of nymph stink bugs on tomato plants. Cover crops serve as good hosts for both stink bugs and leaf-footed bugs; if grown they should be carefully monitored and plowed to prevent the migration of these pests into the main crop. A few species of parasitic wasps feed on stinkbug eggs. Even though insecticidal soaps and pyrethrins are recommended for the management of stink bugs and leaf-footed bugs, they have been reported to provide only a short-term control of these pests. Stinkbugs are difficult to manage especially

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in organic systems. There are currently no highly effective organic insecticides for the management of stink bugs. Preliminary research suggests that trap cropping may be a useful strategy to manage them. Sorghum, millets, buckwheat and sunflowers are recommended as main species of trap crops for the management of stinkbugs.

Picture (From Left to Right)
Green stink bug
Brown stink bug
Stink bug damage

Photos: Leslie Grill



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